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Plaintiffs submit this memorandum, pursuant to paragraph 3 of the September 30, 2008 Pretrial Scheduling Order in this case, setting out their contentions regarding the legal construction of the claims defining the invention of the patent in suit, plaintiffs' United States Patent No. 6,095,850, "Electric Adapter with Display Unit" (Exhibit 1).

### **Background**

Plaintiffs' '850 patent covers, as set out in its thirteen separate claims, each legally defining the scope of the invention(s) for which patent protection has been granted, an electrical energy metering device that plugs into a wall receptacle and, in turn has a socket into which an appliance or other electrical load may be plugged, which measures and displays various electrical parameters of the current supply and appliance or load. The invention, as defined in the claims, is also explained by example in the patent's "specification" (the drawings, background of the invention, descriptions of the drawings and preferred embodiment).

The UPM defendants (UPM Marketing, Inc. and at least one member of the UPM Group from Hong Kong or China), have manufactured, imported and sold in the United States at least two such energy meters, marketed as the UPM EM100 and EM130. Defendants have served their contentions (Exhibit 2) of non-infringement of the '850 patent, specifying the structural and functional elements of each asserted claim that they contend are absent from their UPM energy meters and construing them in a manner intended to be consistent with those assertions.

Defendant SmartLabs, Inc., is the principal distributor of the UPM energy meters in the United States and, as plaintiffs understand, is relying upon the contentions of UPM as to construction and infringement of the '850 patent claims.



Currently, plaintiffs assert that defendants are infringing claims 1, 2, 4-6, 7, and 10-12. Claims 1, 7 and 11 are independent of the others, while claims 2 and 4 are “dependent” in that they also incorporate by reference the elements of claim 1. Claims 5 and 6 are dependent on claim 4, which itself incorporates the elements of claim 1. Claim 10 incorporates the elements of claim 7, and claim 12 those of claim 11. The interrelationship of these claims and their respective elements will be addressed in greater detail below, and those claim elements will be construed insofar as defendants have raised a contention of invalidity or non-infringement that implicates the element.

**Markman v. Westview**

In 1996, the Supreme Court held that the construction and interpretation of patent claims, like contracts, is the exclusive province of the court. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996). In jury cases, such as here where defendants have demanded a jury trial of all issues so triable, *Markman* necessarily requires that patent claims be construed without jury participation and before the jury is presented with factual issues dependent on such claim construction, including infringement and new claims of improper or invalid issue by the Patent Office. While it is uniformly understood that *Markman* itself did not require a separate hearing or argument for the sole purpose of construing the patent claims, cases and comment have suggested that it may occur at any time prior to trial, as part of a preliminary injunction or summary judgment motion that would itself depend on a legal construction of the claims, or as a jury instruction submitted with the pretrial order, depending upon the circumstances of the case, in the sound discretion of the court. Any way it is done, it is important that patent claims not be construed in a vacuum but, rather, in the context



or, better put, with the allegedly infringing device in mind. *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1326-27 (Fed. Cir. 2006). While claims must be construed before an infringement analysis is conducted, and cannot be directed by the structure of the accused device, they are always construed for a purpose and should be framed with accomplishing that purpose in mind. *Id.* Accordingly, plaintiffs shall construe their patent claims as informed by defendants' contentions of non-infringement and invalidity over the prior art. Plaintiffs would ask that the Court be mindful, however, of the early stage of this case and the potential need to revisit claim construction issues as discovery and the case progress.

### **The General Rules of Patent Claim Construction**

Patent claims are to be construed first by their language, construing terms as they are generally understood in the field of the invention, assisted by reference to the patent specification and the official history of the prosecution of the application that resulted in the issuance of the patent. *Teleflex, Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1323 (Fed. Cir. 2002). While reference may be had to the specification, structures, functions and characteristics of the various preferred and possible embodiments of the invention, disclosed in the specification as examples, may not be read as limitations to the claims. *Id.*; *NTP, Inc. v. Research in Motion, Ltd.*, 392 F.3d 1336, 1346, 1363 (Fed. Cir. 2004).

In construing a claim, "[t]he actual words of the claim are the controlling focus." *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1344 (Fed. Cir. 1998). The actual words of the claims are viewed in conjunction with the patent specification of which they are a part and the public record of the exchanges between patent applicants and the



U.S. Patent and Trademark Office (“PTO”), namely the prosecution history: “It is well-settled that, in interpreting an asserted claim, the court should look first to the intrinsic evidence of record, *i.e.*, the patent itself, including the claims, the specification and, if in evidence, the prosecution history \* \* \* Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language.” *Bell Atlantic Network Svcs, Inc. v. Covad Comm. Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir.2001); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

Claim terms are given their ordinary and accustomed meaning as understood by one of ordinary skill in the art, *see, Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202-3 (Fed. Cir. 2002); *Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc.*, 222 F.3d 951, 955 (Fed. Cir. 2000), unless the specification or prosecution history indicates that the inventor adopted or advocated a different meaning for such term. *See, National Recovery Technologies, Inc. v. Magnetic Separation*, 166 F.3d 1190, 1195 (Fed. Cir. 1999). “Absent a special and particular definition created by the patent applicant, terms in a claim are to be given their ordinary and accustomed meaning.” *Renishaw PLC v. Marposs Societa' Per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998).

Only where the meaning of a term remains ambiguous after full consideration of the specification and prosecution history may resort be had to extrinsic evidence, such as expert testimony. *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1555 (Fed. Cir. 1997). Although not “intrinsic evidence” per se, the Federal Circuit has held that dictionaries and technical treatises may be considered along with other intrinsic evidence in resolving the disputed meaning of claim terms. *Vitronics*, 90 F.3d at 1584 n.6. In *Texas Digital*, 308 F.3d at 1202-3, the Federal Circuit explained



that “[d]ictionaries, encyclopedias and treatises \* \* \* are objective resources that serve as reliable sources of information on the established meanings that would have been attributed to the terms of the claim by those of skill in the art,” and that “such references are unbiased reflections of common understanding not influenced by expert testimony or events subsequent to the fixing of the intrinsic record by the grant of the patent, not colored by the motives of the parties, and not inspired by litigation.”

The Federal Circuit has advised that “[i]n most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.” *Vitronics*, 90 F.3d at 1583. However, the court has also recognized that “the testimony of one skilled in the art about the meaning of claims terms at the time of invention will almost always qualify as relevant evidence.” *Eastman Kodak Co. v. Goodyear Tire & Rubber Co.*, 114 F.3d 1547, 1555 (Fed.Cir.1997). Thus, a court may admit and accept testimony by the parties' expert witnesses as background in the technical area at issue, *Mantech Environmental Corp. v. Hudson Environmental Systems, Inc.*, 152 F.3d 1368, 1372-1373 (Fed.Cir. 1998). Thus, extrinsic evidence may be used by the court to assist in the proper understanding of a disputed limitation. But, such evidence may not be used to vary, contradict, expand, or limit the claim language from how it is defined in the specification or file history. *Vitronic*, 90 F.3d at 1584-85.

### **The ‘850 Patent Claims**

Where the patentee defines a claim element by structure and/or function, the claim element is construed to encompass the claimed element as literally defined, as well as its functional equivalents. A device infringes, or is at least found to possess that



claim element, where the claimed structure and functions, as defined by the plain meaning of the claim language construed in light of the specification and prosecution history, are present in the allegedly infringing device, either literally or as an equivalent of the *claimed* element. Where, however, the patentee has elected to define a claim element, pursuant to 35 U.S.C. § 112 ¶ 6, merely as a “means” for performing a function, rather than by claiming structure or function, that claim element, by statute, must be construed to be limited to the corresponding structures disclosed in the specification and equivalents *of those particular structures*. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1360 (Fed. Cir. 2000).

Defendants’ contentions of non-infringement depend primarily upon their assertions that certain elements of plaintiffs’ patent claims should be construed as a “means plus function” pursuant to §112 ¶ 6 and, accordingly, limited to the feature as disclosed in a specific embodiment in the patent specification.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. [*Id.*]

Because plaintiffs’ patent claims do *not* define these aspects of the claimed invention as “means” for performing a specified function but, instead, recite their structure, we will first address the law governing when, if at all, claim language that does not incorporate “means” language to deliberately take advantage of § 112 ¶ 6 and trigger its special construction, might nonetheless be deemed a “means plus function” claim element and construed accordingly.



The absence of the word “means” in the language of the claim gives rise to a rebuttable presumption that the claim is not to be construed pursuant to §112 ¶ 6. *Apex, Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1371-72 (Fed. Cir. 2003). That presumption can be overcome only by the defendant’s demonstrating that the claim language also fails to recite sufficiently definite structure, or merely recites a function in the absence of sufficient structure for performing that function. *Id.* In determining whether the proponent of means-plus-function treatment has met its burden in this respect, the courts are to look to whether the claim language would be understood to one skilled in the art to refer to structure sufficient for performing the recited function. It is not necessary that a claim term call to mind “a single well defined structure” to avoid the application of §112 ¶ 6. *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996). The mere use of functional language in defining a claim element does not convert the claim to means-plus-function format controlled by §112 ¶ 6. Indeed, “the question whether a claim element triggers section 112(6) is ordinarily not a difficult one. Claim drafters conventionally use the preface “means for” (or “step for”) when they intend to invoke section 112(6), and there is therefore seldom any confusion about whether section 112(6) applies to a particular element.” *Id.* at 1583.



### Claim 1

The first claim of the '850 patent defines the scope of the invention in the following terms:

An electric adapter configured to be connected between an electric socket and an electric appliance, for indicating a plurality of electrical parameters of the electric appliance, said electric adapter comprising:

- a housing;
- a plug arranged on a rear of the housing for insertion into an electric socket;
- an outlet socket formed on the housing, whereby the electric appliance can be electrically connected to the outlet socket;
- a *control circuit* including a central processing unit located within the housing for detecting a plurality of electrical parameters of the electric appliance during operation;
- a display unit arranged on the housing for displaying at least one of the plurality of electrical parameters detected by the control circuit; and
- a mode selection switch arranged on the housing and connected to the central processing unit, the mode selection switch being operable from externally of the housing to select which of the plurality of electrical parameters is displayed by the display unit.

Defendants do not dispute that their UPM energy meters are electric adapters for indicating a plurality of electrical parameters of an appliance, as described in the preamble of the claim, that each has have a housing, a plug on the rear and an outlet socket on the front of the housing, a display unit, and a mode selection switch. Accordingly, the meaning of those claim elements are not in dispute on this *Markman* motion, at least insofar as they relate to the parties' infringement contentions.

### "Control Circuit"

Defendants do contend, however, that if the *control circuit* of claim 1 is construed as a means-plus-function element pursuant to §112 ¶ 6, their UPM energy meters do not satisfy that element because defendants' control circuit, albeit having a central processing unit located within the housing for detection of a plurality of electrical



parameters of an appliance, is not the same or an equivalent of the circuit specified and shown in the preferred embodiment of the invention at Fig. 2 [*sic.*, 3] and column 2, line 4 through col. 3, line 15 of the patent (Exhibit 1, 2:4 - 3:15). It is plaintiffs' position that the control circuit claimed in the '850 patent is not a means plus function element and, therefore, is to be construed to cover all structures and devices that perform the recited functions in substantially the same way. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997).<sup>1</sup>

We begin with the threshold question whether the word "means" was used in defining the control circuit element of claim 1. It was not. Accordingly, there is a presumption that this control circuit is *not* to be construed pursuant to §112 ¶ 6. *Apex*, *supra* at 1372. The burden is therefore on defendants to rebut that presumption by showing that the claim nonetheless fails to define any structure, in a manner that can reasonably be understood by one skilled in the art, sufficient for performing the claimed function of "detecting a plurality of electrical parameters of the electric appliance during operation." One need look no further than the language of claim 1 and the understanding of the term "circuit" in the electronics art, as recognized in *Apex* itself, however, to resolve this issue against defendants. In *Apex*, the Federal Circuit held, relying upon "intrinsic evidence" of the meaning of "circuit" as used in the electronics field, that various "circuit" claim elements, including an "interface circuit" and a

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<sup>1</sup> While defendants' contentions of non-infringement of claim 1 depend upon the construction of its "control circuit" element pursuant to §112 ¶ 6 and the alleged non-equivalence of the UPM circuits to the particular circuits disclosed in the preferred embodiments of the '850 patent, plaintiffs will contend that the UPM circuits are the equivalents of the preferred embodiments as well as the language of claim 1 defining that element.



“programming circuit” (*id.* at 1368) defined sufficient structure for performing the claimed functions. *Id.* at 1373.

The term “circuit” is defined as “the combination of a number of electrical devices and conductors that, when interconnected to form a conducting path, fulfill some desired function.” *Dictionary of Computing*, 75 (4th ed. 1996); *Apex Inc. v. Raritan Computing, Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2003); Declaration of Shawn M. Herzinger, ¶ 5. The control circuit contains a central processing unit (“CPU”) which is defined as an electronic circuit that can execute computer programs. *Id.*, ¶ 6. The control circuit is located within the housing. A housing is a structure surrounding and containing the circuitry and other hardware of the device. *Id.* ¶ 7. The control circuit, through its electrical devices and components, detects a plurality of electrical parameters, which means it detects more than one measurable aspect of the electricity, such as the voltage or current. *Id.* ¶ 8.

The specification assigns no special or particular definition to these terms. The specification states that “[t]he control circuit is arranged on a circuit board inside the housing of the adapter” (Exhibit 1, 2:44-46), and describes and shows how the circuit of a preferred embodiment of the invention detects, measures, and displays the electrical parameters through the components and devices, including the CPU. *Id.*, 2:4 - 3:27 and Fig. 3). Similarly, the prosecution history assigns no special meanings to these terms that differ from how they are used in the specification.

Moreover, throughout their request for Patent Office re-examination of the ‘850 patent claims (excerpts at Exhibit 3), which they have appended to their invalidity contentions in this case, defendants refer to the claimed “control means” as being met



by various structures disclosed in the prior art, without limitation by §112 ¶ 6 to the specific embodiment of the '850 patent specification. See, e.g., Exhibit 3, pp. 1, 36, 39. Thus, so far as the defendants are concerned, claim 1 may be construed to cover any circuit or equivalent structure that detects the electrical parameters of an appliance, so long as it is the validity, rather than the infringement, of the claim is being assessed. Patent claims, however, must be construed the same for the purposes of infringement and addressing any effort to overcome the statutory presumption of their validity (28 U.S.C. § 282) by claiming that the Patent Office improvidently granted them. *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003).

Accordingly, the “control circuit” of claim 1 should be construed to cover any electrical circuit that includes a central processing unit within the housing and detects a plurality of electrical parameters of an electric appliance, or other equivalent structure that performs those claimed functions in substantially the same way.

Defendants do not dispute the application of claims 2 and 4-6 to their UPM energy meters other than to allege the absence of the “control circuit” incorporated from claim 1 into these dependent claims (Exhibit 2, p. 3).

#### “Electrical Parameters”

Defendants, in their invalidity contentions, primarily rely upon a Japanese patent application that they contend discloses an energy meter that displays only costs. Claims 1-6, however, each include within their definitions of the invention the indication and display of a plurality of *electrical* parameters of an appliance, as well as a switch to select between the display of those electrical parameters. The specification of the '850 patent includes as examples of such parameters voltage value, current value, wattage,



kilowatt-hour, power value, and power function (Exhibit 1, 1:56-58). This is consistent with the understanding in the art that parameters or characteristics of power source and consumption are the measurable aspects of the electricity itself. Herzinger Decl. ¶ 8. Nothing in the specification indicates that the patentee, by reciting “electrical parameters” in the claims, meant anything other than the direct attributes of the current. The indication and display of the cost of electricity, even if calculated using some detected measure of current over time, does not embody this element of claim 1.

“Central Processing Unit”

Defendants, in contesting validity, also rely upon United States Patent No. 5,869,960 to Brand, which they allege has a CPU as claimed in the ‘850 patent. A “central processing unit” as understood in the electronics field as a circuit that can execute computer programs. Herzinger Decl. ¶ 6. In a digital computer or data-processing equipment, it is the unit containing the arithmetic, logic and control circuits which direct and co-ordinate operation of the computer and the peripheral devices. *Newnes Dictionary of Electronics*, 50 (4th ed. 1999) (*Id.*, Exhibit B).

The specification describes the CPU as receiving the signals from the voltage detecting circuit, current detecting circuit, zero-crossing detecting circuit, and analog-to-digital converters; calculating and processing the signals; and controlling the display unit. 2:52-65, 3:12-15. It is more than a mere combination of switched electronic components. Accordingly, the term “central processing unit” should be construed as an electronic circuit that executes software programs.



**Claim 7**

The next independent claim of the '850 patent, claim 7, defines the scope of the invention as follows:

An electric adapter connected between an electric socket and an electric appliance, for indicating a plurality of electrical parameters of the electric appliance, said electric adapter comprising:

- a housing;
- a plug arranged on a rear of the housing for insertion into an electric socket;
- an outlet socket formed on the housing, whereby the electric appliance can be electrically connected to the outlet socket;
- a control circuit arranged in the housing for detecting the plurality of electrical parameters of the electric appliance during operation; and
- a display unit arranged on the housing for displaying at least one of the plurality of electrical parameters received and processed by the control circuit, wherein the *control circuit* comprises:
  - a voltage detecting circuit for detecting a voltage supplied to the electric appliance and generating a voltage value;
  - a current detecting circuit for detecting a current supplied to the electric appliance and generating a current value;
  - a time base signal generator for providing a time base signal; and
  - a central processing unit *receiving* the voltage value generated by the voltage detecting circuit, the current value generated by the current detecting circuit, and the time base signal for calculating the plurality of electrical parameters, wherein the *voltage detecting circuit* comprises:
    - a *voltage amplifier* electrically connected to the output outlet of the adapter in parallel connection for generating an analog voltage signal;
    - a voltage zero-crossing detecting circuit for detecting a zero-crossing signal of the analog voltage signal and then sending the zero-crossing signal to the central processing unit; and
    - an *analog-to-digital converter* for converting the analog voltage signal generated by the voltage amplifier into a digital voltage value, and then sending the digital voltage value to the central processing unit.

Once again, as with respect to claim 1 of the patent, defendants do not dispute that their UPM energy meters are electric adapters for indicating a plurality of electrical parameters of an appliance, as described in the preamble of the claim, that each has have a housing, a plug on the rear and an outlet socket on the front of the housing, a display unit, and a mode selection switch as defined in claim 7 (Exhibit 2, pp. 4-7). The



meaning of those claim elements are not in dispute on this *Markman* motion insofar as they relate to the parties' infringement contentions.

Defendants again contend, as with claim 1, that the *control circuit* of claim 7 is to be construed as a means-plus-function element pursuant to §112 ¶ 6. That issue should be resolved against defendants on the same grounds as respecting claim 1.

### The "Control Circuit" Sub-Elements of Claim 7

Defendants also contend that their UPM energy meters do not satisfy the "control circuit" element as more specifically defined in claim 7 by four sub-elements.<sup>2</sup>

Defendants do not dispute that their UPM energy meters have the claimed "control circuit" sub-elements of voltage and current detecting circuits insofar as they generate, respectively, a voltage value in the form of an "attenuated proportional voltage signal," and a current value in the form of a "proportional voltage signal," as well as the claimed time base signal generator (Exhibit 2, pp. 5-6). Instead, defendants focus on the control circuit sub-element of a "central processing unit" and two of the three sub-elements of the "voltage detecting circuit" which, in claim 7, itself is defined by three sub-elements: a voltage *amplifier*, a zero-crossing detecting circuit, and an *analog-to-digital converter*.<sup>3</sup>

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<sup>2</sup> The sub-elements of the "control circuit" of claim 7, though they do not appear directly under the initial reference to the control circuit but, rather, later in the claim, under "display unit," are (1) a voltage detecting circuit, (2) a current detecting circuit, (3) a time-base signal generator, and (4) a central processing unit.

<sup>3</sup> Similarly, these three sub-elements do not appear directly below the first reference to the voltage detecting circuit but, rather, at the end of claim 7, under "central processing unit."



The Claimed CPU “Receives” Voltage and Current  
Values Directly or Indirectly from Their Sources

Defendants do not dispute that their UPM energy meters have a central processing unit (“CPU”). Rather, they allege that their CPU does not *receive* the voltage and current values directly from the components that generate them but, rather, indirectly through a “multiplexer” (a sort of signal router), an alternating to direct current (AC/DC) converter, and a pulse-width modulator that converts the analog signal to digital.<sup>4</sup>

Defendants’ contentions that the term “received” limits claim 7 to adapters that *directly* receive these signals from their generating sources within the adapter are belied by the absence of any claim language exhibiting an intent to so limit the claim, as well as by the specification (Exhibit 1, 2:58-64, 3:12-15, Fig. 3) and the manner in which the term, as used in the context of the claim, is understood in the art.

A person of ordinary skill in the art understands that a circuit is comprised of a number of components through which signals pass. A circuit is designed to route signals through the circuit so that the purpose of the circuit is served. A CPU is understood to receive a value if a signal produced by an electrical parameter is routed through the components of the circuit to a CPU. Herzinger Decl. ¶ 6.

Moreover, the specification states that the voltage and current values are sent through components to the CPU and that the CPU receives the signals. Exhibit 1, 2:58-60, 62-65, 3:2-15. The prosecution history does not vary this description.

Defendants construe this claim element to encompass values received by a CPU

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<sup>4</sup> Defendants do not dispute that their CPU(s) do receive the time-base signal as required by claim 7.



indirectly, for example, through a voltage/electric current measurement switching portion and an analog-to-digital converter (Exhibit 3, p. 6, referring to JP616 at ¶ 0015 and Fig. 2), when arguing that this claim element is disclosed in prior art references, albeit not in combination with the remaining elements of the '850 patent claims. But the claims must be construed in the same way for all purposes. *Amgen, supra*.

Accordingly, the term "receiving" as used in claim 7 should be construed to cover the receipt of current and voltage values indirectly, as well as directly, from their generating sources within the adapter.

The "Voltage Amplifier" and "Analog-Digital Converter" of the Voltage Detecting Circuit

Defendants do not dispute that the voltage detecting circuit of their UPM energy meters have the claimed "zero-crossing detecting circuit." But in identifying the components through which the signals pass in their generation or enroute to the CPU, defendants necessarily identify the circuits and components of their UPM energy meters that are, or perform the functions of, the claimed voltage amplifier and analog-to-digital (A/D) converter (Exhibit 2, p. 5).

"Voltage Amplifier"

The meaning of the term "voltage amplifier" as used by those skilled in this art is a device that changes the amplitude of a signal created by the detection of the voltage. Herzinger ¶ 10. The specification describes a voltage amplifier which detects the voltage value supplied to the electric appliance and then generates an analog voltage signal to transmit to the CPU (Exhibit 1, 2: 48-52, 58-60). One skilled in the art would understand that the voltage value would need to be of an amplitude to be receivable to



the CPU and would adjust the amplitude to be within the receiving range. The prosecution history does not vary this description.

Defendants construe this claim element to include “signal conditioning” (see Exhibit 3, p. 6), where a voltage converter detects and converts the amplitude of the voltage and sends the converted analog signal through the remainder of the circuit.

Accordingly, the term “voltage amplifier” should be construed to mean any device or combination of devices that changes the amplitude of the voltage input.

#### “Analog-to-Digital Converter”

Those skilled in the art recognize that an “analog-to-digital converter” can be any circuit, component or combination of devices that convert an analog signal to a digital signal. Herzinger Decl. ¶ 11. It is not limited to any particular component(s). The specification states that A/D converters are used to convert the analog voltage signal and the analog current signal into digital signals (Exhibit 1, 2:58-60, 3:12-15). The prosecution history does not vary the use of this term.

Accordingly, the term “analog-to-digital converter” should be construed to include any device or combination of devices that convert an analog signal to a digital signal.

Defendants do not dispute the application of claims 8 and 10 to their UPM energy meters other than to allege the absence of the “control circuit” limitations incorporated from claim 7 into these dependent claims (Exhibit 2, p.7).



**Claim 11**

Claim 11, the third independent claim of the '850 patent, differs from claim 7 essentially in that it defines the invention by adding further details to claim 1 regarding the current detecting circuit, rather than the voltage detecting circuit, as follows:

An electric adapter connected between an electric socket and an electric appliance, for indicating a plurality of electrical parameters of the electric appliance, said electric adapter comprising:

- a housing;
- a plug arranged on a rear of the housing for insertion into an electric socket;
- an outlet socket formed on the housing, whereby the electric appliance can be electrically connected to the outlet socket;
- a *control circuit* arranged in the housing for detecting the plurality of electrical parameters of the electric appliance during operation; and
- a display unit arranged on the housing for displaying at least one of the plurality of electrical parameters received and processed by the control circuit, wherein the control circuit comprises:
  - a voltage detecting circuit for detecting a voltage supplied to the electric appliance and generating a voltage value;
  - a current detecting circuit for detecting a current supplied to the electric appliance and generating a current value;
  - a time base signal generator for providing a time base signal; and
  - a central processing unit *receiving* the voltage value generated by the voltage detecting circuit, the current value generated by the current detecting circuit, and the time base signal for calculating the plurality of electrical parameters, wherein the *current detecting circuit* comprises:
    - a *current amplifier* for detecting a current flow supplied to the electric appliance, and then generating an analog current signal; and
    - an *analog-to-digital converter* for converting the analog current signal generated by the current amplifier into a digital current value, and then sending the digital current value to the central processing unit.

As with claims 1 and 7 of plaintiffs' patent, defendants do not dispute that their UPM energy meters are electric adapters for indicating a plurality of electrical parameters of an appliance, as described in the preamble of the claim, that each has have a housing, a plug on the rear and an outlet socket on the front of the housing, a display unit, and a mode selection switch as defined in claim 11 (Exhibit 2, pp. 8-11). The meaning of those claim elements are not in dispute on this *Markman* motion insofar



as they relate to the parties' infringement contentions.

Defendants contend, as with claims 1 and 7, that the *control circuit* of claim 11 is to be construed as a means-plus-function element pursuant to §112 ¶ 6. That issue should be resolved against defendants on the same grounds as respecting claim 1.

The "Current Amplifier" and "Analog-Digital Converter" of the Current Detecting Circuit

Defendants' remaining contentions, that they do not infringe claim 11, track their contentions as to claim 7 that their UPM energy meters do not satisfy the "control circuit" element as further defined by sub-elements. Again, defendants do not dispute that their UPM energy meters have the claimed "control circuit" sub-elements of voltage and current detecting circuits insofar as they generate, respectively, a voltage value in the form of an "attenuated proportional voltage signal," and a current value in the form of a "proportional voltage signal," as well as the claimed time base signal generator (Exhibit 2, pp. 9-11). Claim 11, however, further defines the "control circuit" sub-element of a "central processing unit" by reciting three sub-elements to the *current* detecting circuit: a current *amplifier*, a zero-crossing detecting circuit, and an *analog-to-digital converter* for the current signal. Defendants focus on two of these: the current *amplifier* and an *analog-to-digital converter* for the current signal.

Defendants' contentions that claim 11 be limited to an adapter having a CPU "receiving" the current and voltage signals directly from their sources should be rejected for the same reasons proffered in connection with the proper construction of claim 7.



Likewise, construction of the “current amplifier” and “analog-to-digital converter” elements of claim 11 to mean a circuit or electronic component that performs current conditioning, as understood in the art, and any circuit or component that converts an analog signal to digital, including pulse-width modulation, respectively, is no more avoidable here than in the construction of the parallel “voltage amplifier” and A/D conversion of the voltage signal of claim 7.

Respectfully submitted,

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s/ James A. Power Jr

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